BUDAPESTH.—The committee intrusted with the preparations for the first centennial celebration of this university, have decided to invite all foreign universities to send representatives on the occasion. A work on the history of the university is being prepared by Prof. Theodor Pauler, the late Minister of Education.

HEIDELBERG.—In the recently-issued calendar of the University for the present semester we notice a serious falling off in the attendance, the present number of students (461) being 250 less than that for the past summer. This fact is chiefly due to the increasing custom of the German students to gather in the Universities of the great cities during the winter. The theological faculty includes 19 students, the medical, 79, the philosophical, 180, and the legal, 183. Heidelberg still possesses evidently its traditional attractions for English-speaking students, the catalogue containing the names of twenty-one Englishmen and twenty-six Americans, a large proportion of whom are studying under Bunsen. Of the sixty-seven other foreigners in attendance Switzerland contributes eighteen and Russia nineteen. The corps of professors numbers 105, of whom fifty-nine are in the philosophical faculty. Prof. Bluntschli, the leading authority on international law, is the pro-rector for the present year. We notice that Prof. Blum has been forced by advanced age to give up the chair of mineralogy. His connection with the University dates back to 1828, and under his direction the mineralogical department at Heidelberg has long been one of the favourite resorts of students from various countries, the museum ranking among the best in Europe. Prof. Blum's fame as a mineralogist rests chiefly on his thorough and exhaustive researches on pseudomorphs, the results of which are embodied in his work "Die Pseudomorphosen des Mineralreiches." A very complete and practical text-book of mineralogy, as well as the numerous smaller treatises on subdivisions of the science, which have appeared at intervals from his pen, are regarded as standard works.

STRASSBURG.—The grant of money for the new edifices of the university amounts to 10,500,000 marks (over 500,000*l.*). Of this sum 2¼ millions are contributed from the imperial funds, 5½ millions result from Alsace-Lorraine's share of the new imperial bank notes, and the remainder is contributed by the city, the district, and the two provinces. At present the university is attended by 627 students divided as follows among the faculties;—theological, 49, legal, 156, medical, 117, philosophical, 305. Despite the able corps of professors gathered together since the re-establishment of this historic university, the number of students shows a decrease of eighty as compared with 1876, a result due in a great measure to the coldness exhibited by the old French inhabitants towards the German students.

HOLLAND.—The Netherlands School Museum, at Amsterdam, was opened on December 24, 1877, in presence of Mr. Heemskerk (recently Prime Minister of Holland), and several authorities connected with the Educational Department. Mr. A. van Otterloo, for the committee, in his opening speech alluded to the valuable co-operation of England in the exhibition. The authorities afterwards inspected the museum, and expressed their high appreciation of the interesting collections of school appliances exhibited by the School Board for London and others.

ST. PETERSBURG.—A new High School for ladies is to be opened at St. Petersburg for the special purpose of preparing female teachers for women's colleges. The School is provided with the necessary money by a young lady, and it will be conducted by the professors of the St. Petersburg University.

Prof. Tarkhanoff, of the St. Petersburg Medical Academy, having assisted at the examinations in physiology and anatomy of the thirty-six ladies who have now finished their five years' course at the High School of Medicine at St. Petersburg, publishes a report on those examinations. The answers of the ladies, he says, were definite, clear, and often vivid. Deep and very accurate knowledge was shown in anatomy and histology, the examinations having been made according to the extensive programmes existing in ordinary universities. On the average the answers were quite as good as those of male students; but the answers of three or four ladies, by their completeness and brilliancy, produced a deep impression on the examiners, and greatly exceeded all the professor has ever witnessed either as a student or professor.

CHARKOW.—The annual calendar of this Russian university shows an attendance of 442 students. Over half of this number are freed entirely from the payment of lectures, while a third receive annual stipends varying from 180 to 340 roubles. The corps of instructors numbers sixty-four.

SOCIETIES AND ACADEMIES

LONDON

Royal Astronomical Society, December 14, 1877.—Dr. Huggins, F.R.S., in the chair.—A paper by Dr. Wolf, of Zurich, set forth that the sun-spot period varies from seven to sixteen years, eleven years being the average.—A paper by Mr. C. V. Boys described a new astronomical clock. Mr. Christie and Lord Lindsay criticised it.—A photograph of the sun was presented by M. Janssen. It is one of those taken daily at Meudon, measuring one foot in diameter. Dr. De la Rue said it was the finest example of celestial photography he had ever seen. It was not taken with an equatorial, but an instrument after the fashion of the Kew photoheliograph with a 5½-inch object-glass. The picture was not taken at the principal focus, but in that of a secondary magnifier, corrected independently of visual focus. He pointed out the tornadoes visible on the photograph, and spoke of the importance of a physical observatory to register the changes which occur on a tremendous scale every hour, sun-spots being phenomena of comparatively small importance. Capt. Abney spoke in corroboration, and said that M. Janssen at first thought these photographed tornadoes had an atmospheric origin. Mr. Christie said that similar phenomena had been found on the Greenwich photographs, and they had nothing to do with the collodion.—Mr. Glaisher read a paper on the law of force tending to any point whatever in the plane of motion in order that the orbit may always be a conic.—Mr. Lynn gave a description of Mr. Howlett's drawing of the solar spot of October 31 to November 3, being about 15″ diameter.—Lord Lindsay concluded the description of his spectroscope for nebulæ referred to last month.—Mr. Christie made some remarks and criticised it, and the meeting then adjourned.

Photographic Society, December 11, 1877.—Papers were read by Capt. Abney, R.E., F.R.S., on fog-producing emulsions and their rectification, and by H. B. Berkeley, on emulsions. Capt. Abney showed that the cure, or rather the elimination, of fog in emulsions (as also in dry plates) would be effected by the introduction of either bromide, iodine, or nitric acid into the emulsion. Nitric acid prevented the formation of any chemically-produced sub-bromide of silver, and reduced the fog to the state of bromide; where pure bromide is present, it seems almost impossible that there should be fog. If an emulsion plate is exposed to light, and afterwards partly dipped into copper bromide, then exposed in the camera and developed, the portion treated with the bromide will be found to be free from fog and perfectly clear.

PARIS

Academy of Sciences, December 17, 1877.—M. Peligot in the chair:—The following papers were read:—On the order of appearance of the first vessels in the shoots of some Leguminosæ (third part), by M. Trécul.—Note on the ring of Saturn, by M. Tisserand.—On intramolecular work, by M. Boileau.—On an essential improvement of the navigation lock with mixed oscillation, by M. De Caligny.—M. Cailletet was elected correspondent for the section of mineralogy, in room of the late M. d'Ommalius d'Alloy (obtaining thirty-three votes against nineteen for Mr. James Hales).—Production of crystallised sulphide, selenide, and telluride of silver, and of filiform silver, by M. Margottet. The former are obtained by passing vapours of sulphur, selenium, and tellurium, over silver (heated red) by means of a current of nitrogen.—The silver gets covered with the crystals. The crystallised sulphide is transformed into metallic and filiform silver by a current of dry hydrogen at 440 degrees. The corresponding reduction of the selenide and telluride takes place only at the highest temperatures the glass can bear.—Use of lacs of eosine and fluoresceine for preparation of decorative paintings without-poison, by M. Turpin. A potassic or sodic solution of eosine, *e.g.*, treated by an acid, gives a precipitate of eosic acid insoluble in water; this washed till the water begins to take a rose-colour is insoluble in the hydrate of oxide of zinc, and so forms a very rich lac (eosinate of zinc) varying from rose to deep-red, according to the quantity of eosic acid used.—Vine districts attacked by phylloxera (1877), by M. Duclaux. It is noted with reference to L'Aude that the vineyards bordering on the sea (some kilometres in width) are preserved much longer than the others.—The natural enemies of the phylloxera in Germany, by M. Blankenhorn. The small extension of centres of phylloxera there is attributed to the fact that the stocks have been frequented, previous to the phylloxera infection, by natural enemies of the

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insect (which are specified).—On the intermediary integrals of the general equation with partial derivatives expressing that the problem of geodesic lines, considered as a problem of mechanics, supposes a rational integral with reference to components of the velocity of the moving body, by M. Lévy.—Calculation of the longitude or the hour of Paris at sea, by occultations of stars, by M. Baills.—On the conditions with limits in the problem of the elastic plates, by M. Boussinesq.—On the equation of Lamé, by M. Brioschi.—On apparatus for projection with polarised light, by M. Laurent. For polarisers the author uses Nicols made of two, three, or four pieces of spar, each piece with two faces cut parallel to each other and the cleavage; then he cements them together with a hard mastic, and operates the whole like a single piece of spar. The analyser used is a Nicol of 22 mm. diameter; it is placed at the principal focus of the projection lens.—Action of oxychloride of carbon on toluene in presence of chloride of ammonium, by MM. Ador and Crafts.—Action of stable anhydrous acids on stable anhydrous bases; explosion of the compound, by MM. Solvay and Lucion.—Anhydrous phosphoric acid and oxide of sodium may exist intimately mixed in fine powder without reacting at the ordinary temperature, but a rise of less than 100° causes instantaneous combination with remarkable violence. M. Lucion sees here no confirmation of the dualistic theory or argument against the unitarian.—On the sensibility of the pericardium in the normal and pathological states, by MM. Bochefontaine and Bourceret. The sound pericardium is sensible; the external face apparently more than the internal. The sensibility can be shown by mechanical excitations. The pericardium inflamed experimentally shows a lively sensibility, at least on the external face and inwards.—Maturation and diseases of the cheese of Cantal, by M. Duclaux. Enough water remains for development of ferments, and there are present lactic acid and albumen.—Observations on the zoological affinities of the genus Phodilus, by M. Milne-Edwards.—On the measurement of the dihedric angles of microscopical crystals, by M. Bertrand.—On the signification of various parts of the vegetable ovule, and on the origin of those of the seed (concluded), by M. Baillon.—Preparation of alcoholic chlorides and their application to the production of colouring matters, by MM. Monnet and Reverdin.

December 24, 1877.—M. Peligot in the chair.—The following papers were read:—On some applications of elliptic functions (continued), by M. Hermite.—On the rotatory power of metastyrolene, by M. Berthelot. Metastyrolene, derived in the cold state from active styrolene, has rotatory power (just as metaterebenthine shares the rotatory power of terebenthine). On the other hand, inactive styrolene, as prepared by the pyrogenic method, gives an inactive metastyrolene.—On Saturn's ring (continued), by M. Tisserand.—Observations on the Bahmié cotton plant, by M. Naudin. This plant, which is found in Egypt, and is very productive, is not, as supposed, a cross between cotton (*Gossypium*) and Gombo (or *Hibiscus esculentus*). It differs from the old race merely in aspect. It is still in process of improvement. The botanical species is the *Gossypium barbadense* of Linnæus and Parlatore, or Sea Island cotton. It requires much heat, and is recommended for Algeria, where the cotton industry has been declining.—Notions concerning intramolecular work (continued), by M. Boileau.—On M. Boiteau's recent communication regarding comparison of the phylloxera of the oak with that of the vine, by M. Balbiani.—On anthogenesic Homoptera, by M. Lichtenstein.—Progress of the phylloxera in the south-west of France, by M. Duclaux.—On the results obtained by use of sulphide of carbon for destruction of phylloxera, by M. Marion. Reiterated treatment with small quantities is recommended.—On the ventilation of the transport-ship *Annamite*, by M. Bertin. After three hours the volume of air evacuated under the sole action of heat from the chimneys was over 29,000 cubic metres, and might rise to 40,000. This movement of air would secure a renewal of air in the hospital about eight times in the hour.—The death of Ruhmkorff was referred to.—M. Dumas, *à propos* of MM. Cailletet and Pictet's almost simultaneous success in liquefaction of oxygen, read a passage from Lavoisier, showing he had anticipated such results.—On the condensation of oxygen and carbonic oxide, by M. Cailletet. His method was to expand the gases suddenly; when cooled to – 29°, and compressed to the extent of 300 atmospheres; a thick mist appears. This is had from oxygen, even at ordinary temperature, if it have had time to lose the heat acquired simply through compression. Hydrogen, under similar treatment, gave no such mist. Nitrogen was not experimented with.—Experiments by M. Pictet on liquefaction of oxygen, by M. de Lognes. The apparatus is described.—M. Dumas opened a sealed letter deposited by M. Cailletet on December 3, announcing his discovery. M. Pictet's results were announced on December 22. Several members expressed opinions on the subject.—New observations on the *rôle* of pressure on chemical phenomena, by M. Berthelot. He calls attention to the fact that the decomposition of chlorate of potash into oxygen and chloride of potassium an exothermic reaction, and not limited by its inverse, is not stopped by a pressure of 320 atmospheres.—On the employment of graphic methods in the prediction of occultations, by M. Tissot.—On the transformations of contact of systems of surfaces, by M. Fouret.—Experimental researches on magnetic rotatory polarisation; magnetic rotations of luminous rays of various wave-lengths, by M. Becquerel. He experimented specially with bichloride of titanium, interposing a spectroscope between the eye and the analyser in his former apparatus; and he notes some differences between the positive and negative magnetic rotations.—Ordinary and extraordinary indices of refraction of quartz for rays of different wave-lengths as far as the extreme violet, by M. Sarasin. The numerical results for lines of cadmium, sodium, zinc, and aluminium are tabulated.—Engraving on glass by electricity, by M. Planté. The surface of a plate of glass or crystal is covered with a concentrated solution of nitrate of potash (poured on it). A horizontal platinum wire, connected with one of the poles of a secondary battery of fifty to sixty elements, is placed in the liquid along the edges, then holding in the hand the other platinum electrode, covered, except at the end, with insulating matter, one touches the glass with it, and draws characters, &c., which remain distinctly engraven.—On acid acetates (continued), by M. Villiers.—On experiments showing that meningo-encephalitis of the convexity of the brain produces different symptoms, according to the points of this region that are affected, by MM. Bochefontaine and Viel.—On the conditions of development of Ligulæ, by M. Duchamp. He made two pigeons (which are pretty far removed from aquatic birds), swallow some ligulæ from a tench. After four and five days respectively they were killed, and each had in its intestine a living ligula with genital organs developed, and the matrices full of eggs (just as with the duck).—On a miocene alios in the neighbourhood of Rambouillet, by M. Meunier. This points to sudden cataclysm.—On thermal coloured rings by M. Decharme. He remarks on the difference in these on tinned and on zinked iron plates.

VIENNA

Imperial Academy of Sciences, November 8, 1877.—On the least absolute number of sound-impulses that are necessary to production of a tone, by M. Pfaundler.—On generalisation of known triangle propositions to any perfect *n* angles inscribed in a conic section, by M. Cantor.—On the perfect square in general, by the same.—On citramalic acid, by M. Morawski.—On accessory projections in the skull of leporides, by M. Mojsisovics.—On arbitrary and spasmodic movements, by M. Brücke.—On cork and corked tissues generally, by M. Höhnel.

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